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Trend of common crane (*Grus grus*) visit in Chitwan National Park of Nepal

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ABSTRACT

Chitwan National Park (CNP) is heaven for winter birds migrating from North. Annually, various migrating bird species visit CNP for breeding, foraging and to escape the harsh winter in the north. In this context, we studied the pattern of common crane (*Grus grus*), a winter visitor to CNP, for 12 years where we found its fluctuating visit, more indicating to the declining number of birds visiting to the park. We observed land use change and human disturbance to the decreasing of this species number wintering in the park.

Keywords: Winter birds, Migratory birds, Chitwan National Park, land use change, human disturbance

1. INTRODUCTION

Nepal is a Himalayan country blessed with rich biodiversity. Nepal just covers 0.1% of the world land area yet its faunal and floral diversity represents 1.1 and 3.2 percentage of the world (NBS, 2002). Nepal comprises 887 number of bird species (Grimmett et al. 2016, Inskipp et al., 2016 of which 200 wetland dependent species (Baral, 2009). Nepal has been a pristine place for winter birds. Winter birds visit Nepal for breeding, foraging and to escape the harsh winter in the north. An estimated 150 **winter** migratory bird species visit Nepal each year (Personal communication with Hem Sagar Baral). In Chitwan National Park (henceforth, CNP), 643 bird species have been recorded of which 120 are wetland dependent (NTNC-BCC and CNP, 2020; BES, 2020; Jha, 2021). Nepal has put forward stringent rules to conserve bird species that can be understood by observing the protected list of bird species of Nepal (DNPWC, 2020).

Cranes ranges in all the continents except in South America and the Antarctica. Common crane ("*Laxman Saras*" in Nepalese language) belongs to the Gruiformes Order and Gruidae Family. Under Gruidae Family, altogether 15 species belonging to four genera and two sub-families. Ten of which occur in Asia, six of these being threatened (BirdLife International, 2003). Of these, four species of cranes have been recorded from Nepal. Common crane and Demoiselle crane (*Anthropoides virgo*) are passage migrants, Black-necked crane (*Grus nigricollis*) is a vagrant species and Sarus crane (*Grus antigone*) is a

non-migratory sub-species of Indian sub-continent (Inskipp and Inskipp 1991; Kushwaha et al., 2021). Cranes are wetland obligate species but excessive human pressure on wetland habitats has (Scott, 1989). Migrating in "V" formation, common crane species is found in the northern parts of Europe and across the Palearctic to Siberia. They are long distance migrant predominantly wintering in northern Africa (BirdLife International. 2016). It is categorized as Least concern in IUCN RedList of Threatened species (BirdLife International. 2016). In this research paper, we attempt to understand the visiting trend and emerging threats to common crane in CNP of Nepal.

Study Area:

CNP and its buffer zone area is identified as the Important Bird Areas (IBAs) of Nepal (BCN, 2020). CNP possess three major aquatic ecosystems viz., Reu, Rapti and Narayani. Interestingly, the common crane population visit only specific section of CNP. It is observed roosting on sand and muddy banks at Bhalu Tappu of CNP, which is situated in the eastern channel of Narayani River. (Fig. 1).

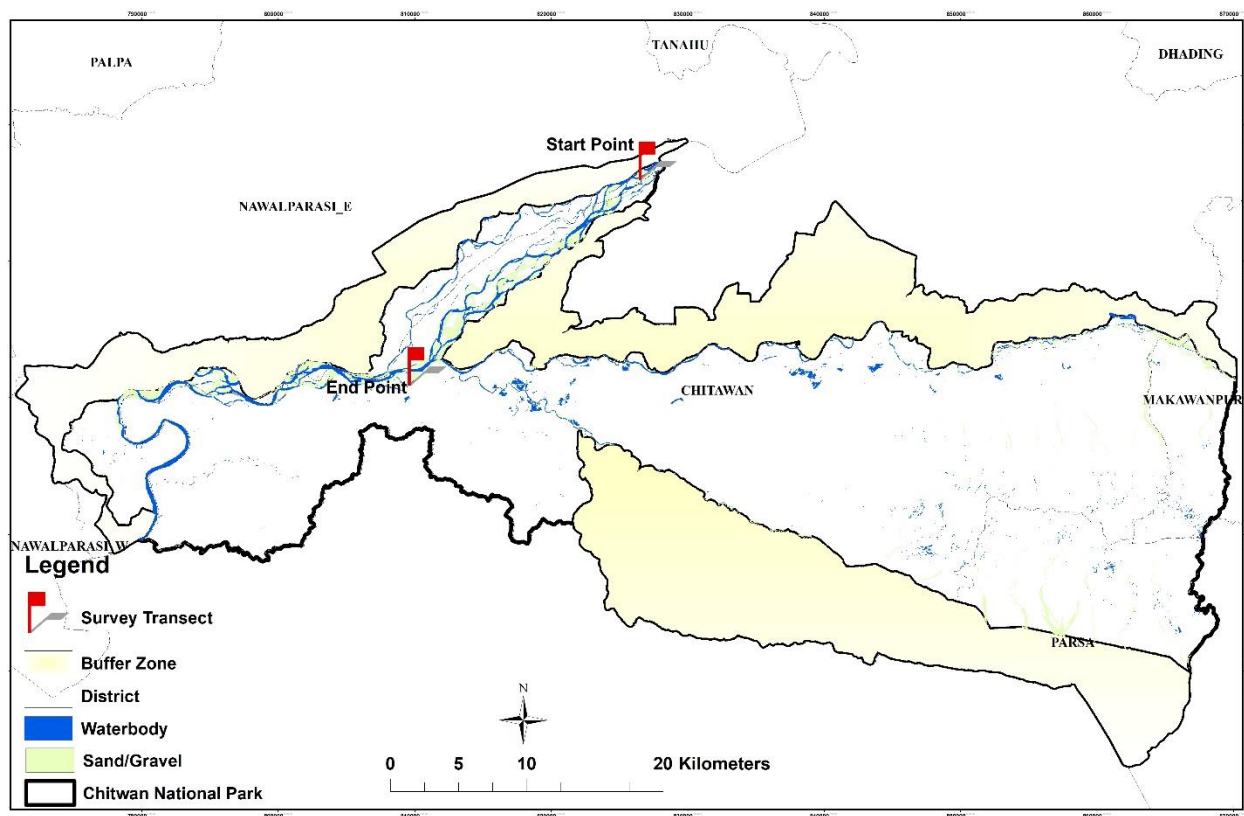


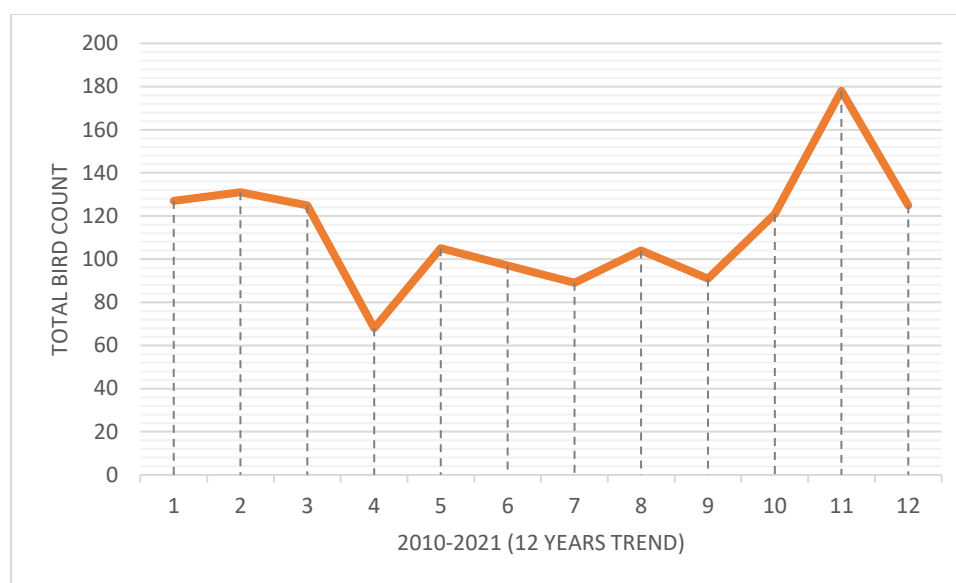
Figure 1. Map showing survey transect in Narayani river of CNP, Nepal

2. MATERIALS AND METHODS

Each year mid-winter waterbird count survey (during January) was conducted using a wooden canoe in CNP of Nepal. The data was accumulated from 2010 to 2021. (Fig.1). Observation was made using 10x50 DPS1 OLYMPUS DPSR binoculars, meanwhile, photographs and video were recorded through Canon PowerShot 5x40 HS. Birds count during the canoeing was conducted with the help of field assistants. Birds crossing the researcher's boat is only counted to avoid double counting. To escape foggy weather in January, counting was done after sunlight or in clear weather when the birds are easily visible. Birds survey was done in south-east braided channel of Narayani River. The river section length where the survey was conducted is about 30.4 km (Fig. 1).

3. RESULTS

From the 12 years of Mid-winter count, we observed fluctuating trend of common crane population in CNP. The highest was observed during 2020 whereas the least number was observed during 2013.



Source: Field Survey and (BES, 2021)

Figure 2. Winter visit of common crane in CNP of Nepal.



Photo: 1. Common crane in the bank of Narayani river of CNP



Photo 2. Common crane flying towards buffer zone from the bank of Narayani river of CNP for feeding

4. DISCUSSION

The common crane is a symbol of wetland conservation. They migrate long distances across many countries, even over the tallest mountains in the world, the Himalayas (Kanai et al., 2000). Nepal is an important wintering ground for common cranes. The timing and spatial use of various habitats during the migration are vital for survival and reproduction (Alerstam 2011, Bauer et al., 2011). Common crane population trends up and down in the period of 12 years in CNP with the population declined in 2021. They are observed roosting at mid-day and night in the sand bank of Narayani River but fly to nearby wetlands and agriculture land of buffer zone at dawn and late afternoon for feeding. Our recent field survey found that the agriculture land, especially, paddy field, where the crane usually forage (they feed on the remnants paddy seeds after the farmer harvest) during their winter visit is converted into large fish ponds, factories, residential plotting, and human disturbed area. As all cranes, common crane is omnivorous. It feeds on plant matter, including roots, rhizomes, tubers, stems, leaves, fruits and seeds. While animal foods include insects, particularly dragon flies, snails, earthworms, crabs, spiders, millipedes, woodlice, amphibians, rodents, and small birds (BirdLife International. 2016). If these habitats which feeds them during their stay in winter are degraded, then their visit to CNP as winter site might be disrupted. Nevertheless, cranes face several risks of during migration, including changing weather, degraded habitats as stop over, hunting, disappearance of wetland habitat and toxins such as pesticides. Alongside, they are found to use the same migratory routes, breeding, wintering area, territory and wetlands regularly (Meine & Archibald, 1996).

Hence, we recommend for further in-depth study to understand the migration routes, stopover sites, staging areas, wintering grounds, breeding territories, summer sites and causes of mortality to aid effective and appropriate management intervention to conserve this species.

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Ethical approval

The ethical guidelines are followed in the study for observation of species 'common crane' with the support of Department of National Parks and Wildlife Conservation and Chitwan National Park & Bird Education Society (BES), Chitwan, Nepal, & Ornithologist Basu Bidari and local communities.

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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